News Releases

NAMRU-SA Researchers Developing Field Portable Sterilizer

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By David DeKunder, 502nd Air Base Wing Public Affairs, San Antonio

Mr. Roy Dory (*front, right*), biomedical engineer and Head of Naval Medical Research Unit San Antonio Biomedical Systems Engineering and Evaluation Department is also the Principal Investigator for the field-ready portable ozone sterilizer project. Dory and team member, Dr. Luis Martinez, (*next to Mr. Dory*) prepare to test the prototype. (*Photo courtesy of NAMRU-SA Public Affairs)*

SAN ANTONIO – Researchers at the Naval Medical Research Unit San Antonio (NAMRU-SA) are developing a portable sterilizer for use in military field operations.

"The prototype ozone sterilizer would enable military medical personnel to sterilize medical and dental instruments in areas that do not have infrastructure to support electrical power, and is less heavy to transport," said Roy Dory, head of the Biomedical Systems, Engineering and Evaluation Department, Combat Casualty Care Directorate, NAMRU-SA.

"The goal of the project is to develop a truly self-sufficient, portable sterilizer that can be operational from battery power," said Dory.

The prototype will replace the bulkier sterilizer systems used in field operations, some of which can weigh up to hundreds of pounds, and need a reliable source of power and a reliable supply chain to function. In contrast, the NAMRU-SA ozone sterilizer can be utilized in austere settings which have no reliable sources of power and a limited supply chain because it can operate on backup battery power for up to six hours.

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"The main things we have tried to address with this system are size, weight, portability and minimizing energy requirements," said Dory.

Unlike current sterilizing devices, the ozone sterilizer doesn't need any consumable resources that must be converted and transported to the field. The sterilizer uses ozone gas, a strong oxidizing agent formed from oxygen and ambient air that kills pathogens and bacteria from forming on medical and dental instruments.

The NAMRU-SA team has been working on the prototype sterilizer for three years. Initial testing was conducted to determine whether ozone was a good sterilizing agent for medical and dental instruments. Once that testing was completed, researchers were able to start development of the sterilizer into an automated system that can control ozone production, monitor conditions in the sterilization compartment, and convert the remaining ozone back into oxygen at the end of the sterilization cycle.

Dory added, NAMRU-SA researchers and scientists have been working with the Marine Corps on developing a prototype for sterilizing dental instruments. Other branches of the armed services are also interested in working with the NAMRU-SA.

"Researchers still need more time to develop the prototype before it can be tested in military field operations," said Dory. This includes talking to potential users on the design parameters of the device. This will have an impact on the final size and weight of the sterilizer system, the amount of time it will take for the system to sterilize instruments, how much ozone the system will produce, the amount of energy it will use and the size of the sterilization compartment and battery capacity.

In addition, the device will need approval from the Federal Drug Administration.

"Having portable ozone sterilizers would enable military medical units near combat zones to have sterilized instruments readily available for use," said Dory. "It would certainly fill a gap by taking the capability to more austere environments, which could potentially get care closer to the casualty."

In the future, the ozone sterilizer could potentially be used by civilian medical personnel in remote places of the world, including humanitarian missions, natural disasters, outbreaks of diseases, pandemics and in other situations people need medical care.

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